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# SCIENCE

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## CONTENTS

<i>Geology of the Colorado River Basin with reference to Engineering Problems: Professor BAILEY WILLIS.....</i>	177
<i>The Expeditions of the American Museum of Natural History.....</i>	182
<i>The Proposed Federation of the American Biological Societies: PROFESSOR A. FRANKLIN SHULL.....</i>	184
<i>Huia Onslow: PROFESSOR T. D. A. COCKERELL</i>	185
<i>Scientific Events:</i>	
<i>Illuminating Engineering Nomenclature and Photometric Standards; French Vital Statistics for 1921; Production of Dyes in the United States; Fellowships for Medical Research; The Second National Highway Conference .....</i>	186
<i>Scientific Notes and News.....</i>	190
<i>University and Educational Notes.....</i>	194
<i>Discussion and Correspondence:</i>	
<i>Pasteur on Science and the Applications of Science: DR. CHARLES ROBERTSON, Cultivation and Evaporation: DR. JEROME ALEXANDER. Depositories for Scientific Publications: DR. W. E. ALLEN. Alfred Goldsborough Mayor: DR. T. C. MENDEN-HALL .....</i>	194
<i>Scientific Books:</i>	
<i>Stevenson on Terrestrial and Celestial Globes: PROFESSOR L. C. KARPINSKI.....</i>	199
<i>Special Articles:</i>	
<i>The Effect of Absorbed Hydrogen on the Thermo-electric Properties of Palladium. R. M. HOLMES. The Effect of Sperm boiled in Oxalated Sea-water in initiating Development: DR. E. E. JUST.....</i>	201
<i>The Western Society of Naturalists: Dr. CHESTER STOCK.....</i>	204

## GEOLOGY OF THE COLORADO RIVER BASIN WITH REFERENCE TO ENGINEERING PROBLEMS<sup>1</sup>

ANY account of the geology of the Colorado River basin falls naturally into two parts: that which deals with the life of the Colorado River and that which describes the preceding ages before the river began to flow. Professor Pack has presented the life history of the river. It is my task to sketch the earlier history of this part of the continent. With reference to the engineering problems, the geologist is concerned with three questions relating to the stability of the dam as affected by possible earthquakes, the nature of the foundation rocks, and the durability of the rocks used in construction. Reference will be made to these matters after the geology has been described.

We have become familiar with moving pictures, which present a succession of views, each one of which differs so slightly from the preceding that the eye sees their sequence as a continuous movement. The intervals are fractions of a second. The action is timed to our human scale. Geographic changes are exceeding slow. If we would present a moving picture of a succession of landscapes, the intervals between the views would be a hundred thousand or even a million years. Even so, the eye would see a continuous procession of views. Mountains would grow to majestic heights and waste away till their sites became plains. Rivers would develop and competing for territory would become master streams or tributaries according to the law of the strongest. Seas would invade the land and retreat from it after ages of occupation. Climates, floras and faunas would change. Such is the moving picture of geologic

<sup>1</sup> Presented in the Symposium on "The Problems of the Colorado River" at the Salt Lake City meeting of the American Association for the Advancement of Science and the Pacific Division.